

1. -2. Canceled

3. (Currently Amended) An isolated polynucleotide molecule comprising a mutant allele of thiopurine S-methyltransferase (TPMT) gene or fragments thereof containing single nucleotide polymorphisms, SNPs 10 and/or 17, and/or SNPS 26 and 29 in the following haplotypes (combinations):

- a) SNP 26 being MT(GG) and SNP 29 being WT(GG)
- b) SNP 26 being HT(AG) and SNP 29 being WT(GG)
- c) SNP 26 being MT(GG) and SNP 29 being HT(AG)
- d) SNP 10 being MT(TT) and SNP 17 being MT(GG)
- e) SNP 10 being HT(AT) or MT(TT) and SNP 17 being WT(TT)
- f) SNP 10 being MT(TT) and SNP 17 being HT(GT)
- g) SNP 10 being HT(AT) or WT(AA) and SNP 17 being HT(GT)
- h) SNP 10 being WT(AA) and SNP 17 being MT(GG).

4. Canceled

5. (Currently Amended) An isolated polynucleotide molecule fully complementary to ~~any one of~~ the polynucleotide molecule ~~molecules~~ of claim 4 ~~claims 1-4~~.

6. (Currently Amended) A method ~~diagnostic assay or kit~~ for determining thiopurine S-methyl-transferase (TPMT) genotype of a subject which comprises

- a) isolating nucleic acid from said subject;
- b) amplifying specifically a thiopurine S-methyltransferase (TPMT) PCR fragment with primers of Table 2 from said

nucleic acid, which includes at least one of SNPs of ~~claims 1-4~~ claim 4 thereby obtaining an amplified fragment; and

c) genotyping the amplified fragment obtained in step b), thereby determining the thiopurine S-methyltransferase (TPMT) genotype or haplotype of said subject,

d) ~~the kit comprising sequence determination primers and sequence determination reagents,~~ wherein said primers are selected from the group comprising primers that hybridize to the polymorphic positions in the human TPMT genes according to claim 4 ~~claims 1-4~~; and primers that hybridize immediately adjacent to the polymorphic positions in the human TPMT genes according to claim 4 ~~claims 1-4~~.

7. - 8. (Canceled)